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10/583,554	06/19/2006	Mineyuki Kubota	292333US0PCT	9827
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
BROOKS, CLINTON A				
ART UNIT		PAPER NUMBER		
1621				
NOTIFICATION DATE		DELIVERY MODE		
03/18/2011		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com

oblonpat@oblon.com

jgardner@oblon.com

# Office Action Summary

**Application No.**

10/583,554

**Applicant(s)**

KUBOTA ET AL.

**Examiner**

CLINTON BROOKS

**Art Unit**

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/17/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 7-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/17/2010
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Status of Claims**

In the response received November 17, 2010, Applicants amended claims 1-5, and 12-13. Claims 1-14 are pending, claims 7-11 stand withdrawn.

### **Information Disclosure Statement**

All the references from the IDS received 11/17/2010 have been considered.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

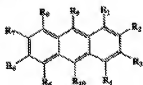
**Claim 1-6, 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-11323323 ("the '323 publication", published November 26, 1999).

The '323 publication teaches (machine translation previously made of record) for example the genus below:

[Claim 1] A luminescent material characterized by what is shown in a following general formula (1) which makes an anthracene ring a basic skeleton.

[Chemical formula 1]

—模式 (1)—



(R<sub>1</sub> - R<sub>8</sub> show a hydrogen atom, an alkyl group, and an alkoxy group among a formula.) R<sub>9</sub> and R<sub>10</sub> express a naphthyl group which may have a substituent chosen from an alkyl group and an alkoxy group, an anthryl group, a phenan tolyl group, a biphenyl group, and a terphenyl group.

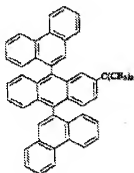
Further, the '323 publication teaches the R<sub>9</sub> and R<sub>10</sub> expresses a naphthyl group which may have a substituent chosen from an alkyl group and an alkoxy group; an anthryl group, a phenan tolyl group, a biphenyl group, and a terphenyl group. This interpretation is supported by the examples.

Examples of species include:

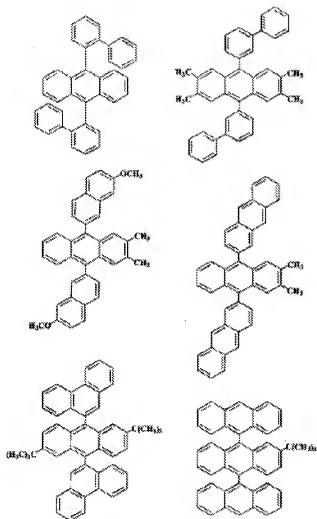
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{0041}

{113}



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{0031}

[Chemical formula 10]

All of the examples of the '323 publication that have substituents at the 9th and 10th position of the anthracene core have the same substituent.

Thus, the '323 publication fails to teach an example wherein the substituents at the 9<sup>th</sup> and 10<sup>th</sup> positions are different.

However, the genus teaches that a limited number of different groups can be placed in these positions and an overlapping/encompassing genus which has the same utility as the instant application.

It would have been prima facie obvious to one having ordinary skill in the art at the time the invention was made to start with the specie of paragraph [0041] and substitute one group for a 2-naphthyl group as depicted in the specie of paragraph [0031] because structurally similar compounds are expected to have similar properties. One skilled in the art would expect success in the substitution because the genus teaches that the groups being substituted have similar properties. Further, since both of these groups are exemplified in species they are preferred groups.

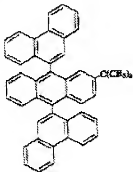
**Claim 1-6, 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-11323323 ("the '323 publication", published November 26, 1999) in view of US2003/0068524 ("the '524 publication", made of record in previous office action).

The '323 publications teaches as disclosed above and which is incorporated by reference herein. For example the '323 publication teaches the following specie which contains a 9-phenanthryl group:

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【0041】

【化13】



Further, the '323 publication teaches that these compounds have utility in organic light emitting devices (title).

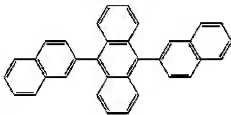
The '323 publication fails to teach a specific compound as recited in claim 14.

The '524 publication teaches that the compound in paragraph [0064] is one of two preferred compounds.



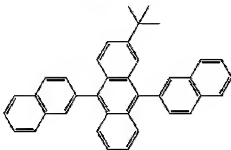
[0061] Preferred host materials for the blue luminescent layer of this invention include:

[0062] a) ADN

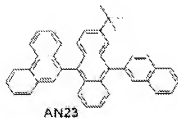


[0063] ;or

[0064] b) tertiary butyl AND (TBADN)



One of the species of claim 14 is shown below for reference:



It would have been prima facie obvious to one having ordinary skill in the art at the time the invention was made to substitute the naphthyl arm of the specie taught by the '524 publication with one of the 9-phenylantryl arms of the specie taught by the '323 publication to

arrive at the specie AN23 recited in claim 14 because the '524 publication teaches that the naphthyl containing structure is preferred. One would expect success in the substitution because the art teaches that these molecules are used for the same purpose.

### **Response to Applicants Arguments/Amendments**

Applicants amendment to the specification is noted in the response received November 17, 2010. Specifically, Applicants amended table 1 on page 42 to correct a typo. This modification to the specification is supported by at least Table 1 of the priority document.

With respect to the 102(b) rejection, over EP1009044 Applicants argue that claims 12-13 are not anticipated by compounds 41, 42, and 43 or the subgenus on page 37 of the '044 publication because these compounds do not have:

at least one of A<sup>1b</sup> and A<sup>2b</sup> represents a substituted or unsubstituted condensed aromatic hydrocarbon ring group selected from 1-phenanthryl group, 2-phenanthryl group, 3-phenanthryl group, 4-phenanthryl group, 9-phenanthryl group, 1-naphthacenyl group, 2-naphthacenyl group, 9-naphthacenyl group, 1-pyrenyl group, 2-pyrenyl group, and 4-pyrenyl group;

However, claim 13 is dependent on claim 1 not 12.

The 102(b) rejection with respect to claim 12 is withdrawn.

With respect to the 102(b) rejection and claims 1-5, Applicants present in the IDS a reference "correcting" mistakes in compounds 41, 42 and 43. Applicants are persuasive with respect to compounds 42 and 43, however the IDS reference provided by Applicant states:

In fact compounds 13 and 41 were fairly obviously intended to have a '-F' substitution on the 'left-hand' ring. However these corrections have not been made at this time as there is an argument that these structures are chemically possible as the bond could represent a methyl group. However, even though it is understood that one cannot use the priority document on which to base a correction, if the Examiner recognises the clear symmetry of the many compounds specified and the obvious intent, coupled with the many obvious printing errors on the 'left-hand' side of molecules, it would be appreciated if consideration could be given to correcting these two structures as well.

Specifically, "[h]owever these corrections have not been made at this time as there is an argument that these structures are chemically possible as the bond could represent a methyl group". Thus, the argument for compound 41 is not persuasive, but in view of the amendment the 102(b) rejection is withdrawn.

The amendment necessitated the 103(a) rejection below.

With respect to JP '323 all of the specific examples have the same substituent at the 9<sup>th</sup> and 10<sup>th</sup> positions, in addition the '323 publication teaches:

(R<sub>1</sub> - R<sub>8</sub> show a hydrogen atom, an alkyl group, and an alkoxy group among a formula) R<sub>9</sub> and R<sub>10</sub> express a naphthyl group which may have a substituent chosen from an alkyl group and an alkoxy group, an anthryl group, a phenen tolyl group, a biophenyl group, and a terphenyl group.

Thus R9 and R10 are a naphthyl (examples include naphthyl) or phenan tolyl which may have a substituent within a series of groups. Applicants argue that because there are no unsymmetrical examples, and that there are no methods of making a 9,10-asymmetric anthracenes there is no reasonable basis to make modifications of the compounds disclosed in these references to arrive at the claimed compounds. Further, Applicant extends this argument to the other rejection of record.

However, the skilled artisan is a skilled organic chemist. At least example at page [0039] of the '323 publication for example (machine translation) teaches the anion addition to butylanthroquinone. A skilled artisan with this level of skill understands stoichiometry and that that one equivalent of different nucleophiles could be added in subsequent steps.

With respect to the unexpected result asserted by Applicant, page 42 of the specification:

The results are shown in Table 1.

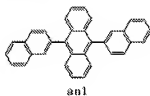


Table 1

	Compound of Light-Emitting Layer	Current Efficiency (cd/A)	Half Lifetime (hours)
Example 1	AN7 / D1	10.9	4,200
Example 2	AN8 / D1	1.3	4,200
Example 3	AN11 / D1	11.0	5,800
Example 4	AN13 / D1	10.8	3,700
Example 5	AN44 / D1	10.0	3,000
Example 6	AN6 / D1	10.1	3,300
Example 7	AN12 / D1	10.8	4,900
Example 8	AN11 / D2	10.3	3,700
Comparative Example 1	an~ / D1	9.0	2,200

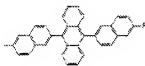
The comparative example an1 is found in the art and is close prior art. The examples clearly show that AN7, AN8, AN11, AN13, AN44, AN6, and AN12 have longer half lives and in

light of the amendment to the specification all have better current efficiencies. A claim drafted commensurate in scope with the results would overcome an obviousness rejection.

### New Rejection Necessitated By Amendment

**Claims 1-5, 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over EP1009044 ("the '044 publication", made of record on the IDS received January 22, 2009).

The '044 publication teaches at least an overlapping genus, and at least the following anticipatory species:



Compound 41

In this case the substituent at the 9th and 10th positions are different from each other.

With respect to the rejection and claims 1-5, Applicants present in the IDS a reference "correcting" mistakes in compounds 41, 42 and 43. Applicants are persuasive with respect to compounds 42 and 43, however the IDS reference provided by Applicant states:

In fact compounds 13 and 41 were fairly obviously intended to have a '-F' substitution on the "left-hand" ring. However these corrections have not been made at this time as there is an argument that these structures are chemically possible as the bond could represent a methyl group. However, even though it is understood that one cannot use the priority document on which to base a correction, if the Examiner recognises the clear symmetry of the many compounds specified and the obvious intent, coupled with the many obvious printing errors on the 'left-hand' side of molecules, it would be appreciated if consideration could be given to correcting these two structures as well.

Specifically, "[h]owever these corrections have not been made at this time as there is an argument that these structures are chemically possible as the bond could represent a methyl group". Thus, in this case, the methyl group was contemplated, and was recognized as chemically valid methyl group.

Still further, the '044 publication teaches at least the following subgenus (p 37):

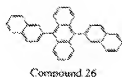


wherein:

substituents R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each individually hydrogen; or alkyl of from 1 to 24 carbon atoms; aryl or substituted aryl of from 5 to 20 carbon atoms; or heteroaryl or substituted heteroaryl of from 5 to 24 carbon atoms; or fluorine, chlorine, bromine; or cyano group.

Importantly, the subgenus teaches that each R<sup>1</sup>-R<sup>4</sup> are individually different groups. Thus, even the symmetrical groups compound 42 or 43 as the di-cyano or the di-methoxy respectively differ by the substitution of one group from a compound that read on claims 1-5.

With respect to claim 13-14, the '044 publication teaches:



In this case R<sup>3</sup> and R<sup>4</sup> are H. The genus above teaches that each group can individually be different. Further, the subgenus teaches "aryl". The logic below applies to read on a compound such as AN6 of claim 14.

It would have been prima facie obvious to one having ordinary skill in the art at the time the invention was made to substitute one of the groups of compound 41 or 42 or 43 for example, for a hydrogen or halogen for example to arrive at a compound within the claimed invention; or to substitute one group of compound 26 to arrive at the claimed invention. One skilled in the art would have been motivated to increase the number of products available for the same utility and one skilled in the art would have expected success because structurally similar compounds are expected to have similar properties. In this case, the subgenus links the compounds as having the same utility, and the subgenus teaches that each group R1-R4 is individually a group which suggests that the groups can differ.

### Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON BROOKS whose telephone number is (571)270-7682. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL SULLIVAN can be reached on (571)272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cab/

/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621